mother and one for the physician. Every three months thereafter the mother should bring the child to the physician for a thorough examination, for the condition of growth, development of muscular system, the bones, lungs, heart, throat and digestive organs, spine and mental condition of the child, should be registered, once more in duplicate, one for the mother and one for the physician. This should be continued until the child is at least six years old. The advantage of a duplicate registration would be for the mother, if she changes her location, or changes physicians. By keeping such a record, it would show the mother, as well as the physician, the growth and condition of the child, and stimulate more of an interest in its welfare. It would also enable the physician to keep in better touch with his patients. The birth of the child should be promptly put on record, also the death, for only by comparison is our success or failure known. The child at some time during the first year should be vaccinated, and, if a male having a long prepuce, should be circumcised, for elimination of diseases as well as for cleanliness. By so doing we will have taken a long step toward the conservaton of our children.

DIVERTICULA OF THE FEMALE URETHRA.*

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The importance of diverticula of the various viscera has been especially emphasized during the last few years. While some structures are thus affected more frequently than others, there are authentic cases on record in which sacculations have formed in practically all the hollow viscera.

By urethral diverticula or pouches, we mean cavities of larger or smaller size which communicate with the urethra and at times contain urine. In general, they may be classified into true diverticula and false diverticula; the former are lined with urethral mucosa while the latter have no definite lining membrane but extend into the paraurethral tissues.

In 1867, Priestley[1] published a typical case and gave an excellent description of the clinical history. When his patient was eight months advanced in pregnancy, a swelling appeared at the orifice of the vagina, which was not very sensitive to touch, but was attended by forcing pain, and a sense of something about to protrude. When labor came on, a soft tumor, like a small egg, was found attached to the neck of the bladder, and projected into the vagina. Although all possible care was exercised in supporting it during the passage of the foetal head, the pressure to which it was subjected had the effect of bursting it, and a quantity of thick fluid was discharged by the urethra. No further discomfort arose from it at the time, beyond some slight irritation of the bladder; but when she began to go about again, the swelling reappeared as before, and from time to time discharged a quantity of semi-puriform matter.

"On examination, an elastic swelling of the size of half a hen's egg was found lying in the vaginal orifice. It was not unlike a cystocele, but was rounder in form, with a narrower base and it was attached not to the bladder, but to the posterior wall of the urethra. On squeezing it, a mixture of urine and pus flowed from the urethra to the extent of half an ounce, and the swelling collapsed. On passing a probe along the urethra, it passed first into the bladder but by a little manipulation, it entered a small orifice leading to the cyst and the point was felt in the cavity of the cyst through the anterior vagina wall. The tumor did not form again until the next time for emptying the bladder, when a portion of urine always passed into the cavity, which seemed like a diverticulum in the course of the urethra." Temporary relief was obtained by the use of an especially designed pessary.

Two other cases were reported by Priestley; one in which sebaceous-like material was discharged from the urethra; and the other one presented a cyst in the anterior vaginal wall, directly under the urethra but showed no communication with it. He considered their origin to be from pre-existing glandular structures of the urethra.

In 1875, Lawson Tait[2] reported one case in which the diverticulum was excised and found to be lined with mucous membrane. Also, in 1885,[3] he reported three other similar cases. Regarding the etiology, he states: "The first, and I think the most likely of these is that there is, as the origin of this condition, an error of development by which a small off-shoot of the urethra, like a diverticulum of the intestine, is the result of faulty union of the perineal folds, and that this becomes of pathological importance when women become accustomed to those errors of urination to which they are all more or less addicted. The second explanation is that this urethrocele is formed by the union between the urethra and a cyst of pathological origin in the roof of the vagina. But I am disposed to regard the former as the more likely of the two from the extraordinary similitude which all my four cases have presented and from the fact that I have never seen any cysts at all like them in a position that such a communication with the urethra might take place."

Routh,[4] in reporting three cases, says: "Their etiology seems to be (1) closure of the ducts of pre-existing urethral glands, retention cysts resulting. Suppuration and ulceration into the urethra by a small, often valvular hole follows and the inflammation is kept up by urine trickling into the sac at each micturition; (2) blood cysts that have passed through similar changes; (3) the formation of pseudo-cysts by injury to the urethral floor during labor or menstruation."

Braxton Hicks had seen five cases. In one case, the cavity was filled with phosphatic concretions. He opened the cavity in each case and kept it open until the urethral opening closed, which usually occurred after a short time. Winckel[5] records two cases which he thinks were due to inflammation of the urethral lacunae. In one of these, the walls of the cyst consisted of muscular tissue and the inner surface was lined with pavement epithelium.

In 1906, Watts[6] reviewed the cases of urethral diverticula in the male and was able to collect sixteen cases from the literature. Of these cases, nine were under five years and only five were over

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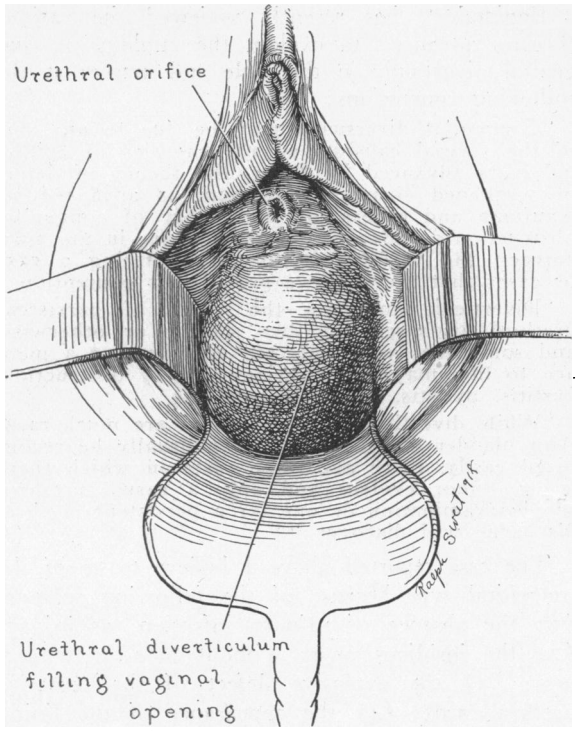

Plate I.
Appearance of Diverticulum Before Operation.

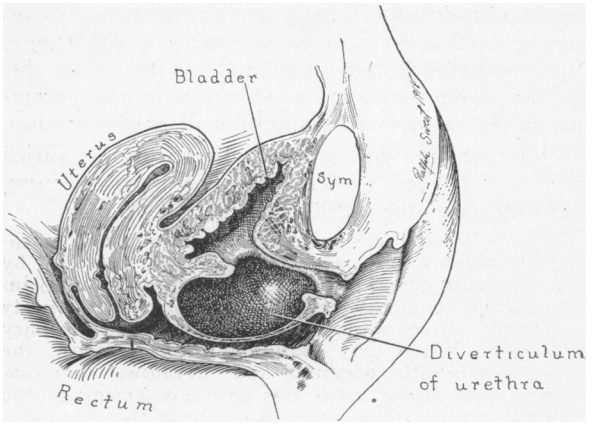

Plate II.
Sagittal Section of Diverticulum, Showing Location and Extent of Involvement of Posterior Urethra.

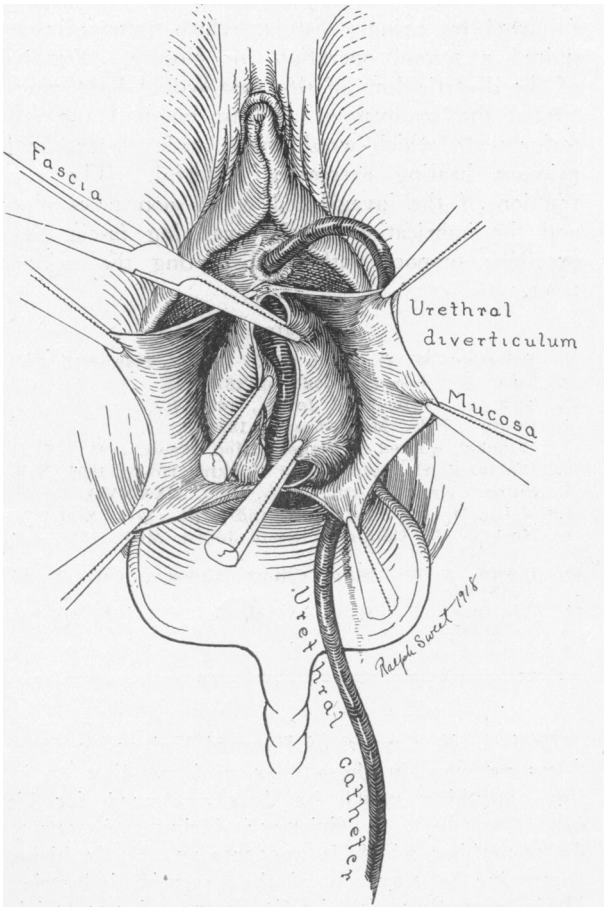

Plate III.
Separation of Perineal Fascia from the Mucosa of the Anterior Vaginal Wall.

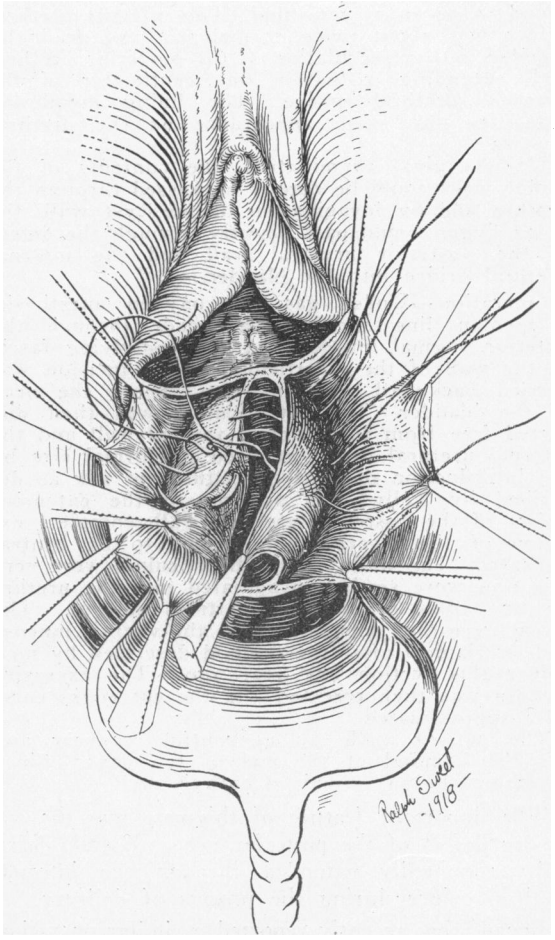

Plate IV.
Method of Overlapping the Fascia.

fifteen years of age. He states that the etiology of the congenital type is not definitely known but from a study of the cases of the literature, valves of the urethra seem to be of secondary importance. Suter[7] concludes that congenital diverticula are due to faulty development in which epidermal pockets communicate with the inferior wall of the urethra.

The etiology of acquired diverticula is varied and may be due to urethral calculus or stricture, perforation of the urethra, etc.

The following case presented some unusual features: Mrs. E. K., aged 36, married, referred by Dr. Reginald Knight Smith, complaining of total incontinence of urine. Her past history was entirely negative; there was no history of genito-urinary infection. When first examined by Dr. Smith, she was eight months pregnant and on vaginal examination, a soft tumor mass was seen presenting at the vaginal orifice. This mass was about the size of a hen's egg. There was no tenderness but pressure caused the escape of muco-purulent material from the urethra which showed no organisms on careful microscopic examination. During the last two months of pregnancy, there was an escape of urine on coughing. The patient was delivered at term of a normal child by low forceps on account of the prolonged second stage. There was no apparent perineal tear. The patient had not borne children previously. The puerperium was entirely normal but on leaving her bed, there was a constant dribbling of urine.

On cystoscopic examination three weeks after delivery, the urethra readily admitted a number ten Kelly cystoscope, and the bladder wall was found to be entirely normal. The internal urethral orifice was about twice normal size and gradually blended with a sacculation of the posterior urethral wall extending to within one centimeter of the external urethral orifice. The lining membrane presented the same appearance as the urethral mucosa.

Upon vaginal examination, the contents of the tumor mass could be readily expressed through the urethra and by invagination of the cyst wall, the index finger would pass directly through the defect in the posterior urethral wall and the internal urethral orifice into the bladder.

Operation.—Under gas and oxygen anesthesia, a median line incision was made through the anterior vaginal mucosa and the underlying fascia to the wall of the diverticulum. This incision was carried backward sufficiently to expose the neck of the bladder. The diverticulum was then dissected free from the anterior vaginal wall and the internal urethral orifice reduced to normal size by the introduction of mattress sutures of silk as described by Kelly.[8] On account of the extensive defect of the posterior urethral wall, complete excision of the diverticulum seemed to be contraindicated. The walls of the diverticulum were very thin and were readily invaginated into the urethra by two rows of running mattress sutures. The fascia were then separated from the vaginal mucosa and overlapped after the method described by me[9] before this section one year ago. The excessive mucosa was then resected and the cut edges carefully approximated.

The patient made an uneventful recovery and left the hospital at the end of ten days. Since operation she has remained entirely well.

The important feature of this case was the extensive defect of the posterior urethral wall which had undoubtedly extended through the internal urethral orifice during the process of delivery.

Bevan[10] has recently reported a similar operation for diverticula of the esophagus with excellent results.

Englander[11] has recently reviewed the various theories advanced to explain the etiology of congenital diverticula in the male and arrives at the following conclusions:

"Congenital diverticula may be due to any one of the several causes, and the theories of epithelial rests advanced by Suter, the theory of defect or weakened corpus spongiosum as advanced by Kaufman and others, or the theory of congenital obstruction as advanced by Watts, are in the main correct, the various authors encountering a case or cases that they believe prove their contention.

"Diverticula may be the cause of persistent urethral discharge, whether specific or otherwise, and sometimes when infected may become a menace to life, may cause serious urinary obstruction, cystitis, pyelitis, and pyelonephritis.

"While diverticula of the urethra are much rarer than bladder diverticula and can usually be recognized easily, there are some cases in which there is no tumor evident and only a casual urethroscopic examination or one for a persistent urethral discharge will discover it."

The case reported above I believe to be of the congenital type because of the following reasons: (1) the absence of urinary infection, or injury; (2) the insidious onset without pain or tenderness; (3) the extensive defect of the posterior urethral wall; (4) the appearance of the lining membrane; (5) and the absence of any urinary obstruction.

The recognized treatment in the past has been total excision of the sac; this, however, was usually followed by urinary fistula, which frequently required a second operation for closure. Excision of the diverticulum in this case would have necessitated the removal of at least one-half the posterior wall, which would have made closure with primary healing extremely doubtful. The contraction of the invaginated walls soon takes place and the imbrication of the overlying fascia gives excellent support without disrupting the urinary tract.

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Prof. T. N. Carver, of Harvard University, says: "Anyone who, in these days of impending doom, buys anything which he does not need for his health, strength, or efficiency is hiring some one to do something which is unnecessary. He is hiring some one to stay out of the essential industries. He is competing with the Government for materials and man power which it needs to win the war and preserve the liberties of mankind."